

Remarks

This Application has been reviewed carefully in light of the Office Action dated April 30, 2010. Although Applicants believe all claims are allowable without amendment, to advance prosecution Applicants have made a clarifying amendment to independent Claim 1. This amendment is not considered necessary for patentability and does not add any new matter. Applicants respectfully request reconsideration and allowance of all pending claims.

I. The Claims are Allowable over the Proposed Keller1-Keller2-Replacement Instructions Combination

The Examiner rejects Claims 1-24 under 35 U.S.C. § 103(a) as being unpatentable over Hovestadt and Keller et al., et al., *Scheduling in HPC Resource Management Systems: Queuing vs. Planning*, PROCEEDINGS OF THE 9TH WORKSHOP ON JOB SCHEDULING STRATEGIES FOR PARALLEL PROCESSING, Seattle, WA, pages: 1-19, 6-2003 (“Keller1”), in view of Keller et al., *Anatomy of a Resource Management System for HPC Clusters*, Vol. 3, 2001 (“Keller2”), and further in view of Cisco Systems, *Cisco 12012 Gigabit Switch Router Switch Fabric Cards Replacement Instructions* (“Replacement Instructions”). Applicants respectfully traverse these rejections and discuss independent Claim 1 as an example.

A. The Proposed Keller1-Keller2-Replacement Instructions Combination Fails to Disclose, Teach, or Suggest all Claim Limitations

The cited references fail to disclose, teach, or suggest each and every limitation of Claim 1. Claim 1 is allowable for at least this reason. For example, at a minimum the cited portions of the proposed *Keller1-Keller2-Replacement Instructions* combination fails to disclose, teach, or suggest the following limitations recited in Claim 1, as amended:

- determining, using one or more computers, an original subset of a plurality of nodes, the original subset comprising nodes currently unallocated to a job, each node in the plurality of nodes comprising a switching fabric integrated to a card and at least two processors integrated to the card, the switching fabric allowing node to node communication during execution of a job.

In responding to Applicants’ previous arguments related to these limitations, the Examiner asserts, “First of all, merely saying “‘determining’ the first subset” is only mental and it covers every generic thing. The specification does not show how to implement a patentable manner or any novel determination. It should be noted that anyone who could blankly say ‘determining.’ Therefore, in Keller 1, the mention of ‘N defines the number of

nodes which are not allocatable . . . ' is more than a determination of a first subset." *Office Action* at 2.

First, this element of Claim 1 does not merely recite "determining the first subset," as alleged by the Examiner. Instead, even prior to the amendments presented in this Response Claim 1 recited "determining an original subset of a plurality of nodes, the original subset comprising nodes currently unallocated to a job, each node in the plurality of nodes comprising a switching fabric integrated to a card and at least two processors integrated to the card," each limitation of which must be disclosed, taught, or suggested by the cited references for the Examiner's obviousness rejection to be even potentially appropriate. These limitations of Claim 1 certainly do not cover "every generic thing," as alleged by the Examiner. Applicants submit that it is improper for the Examiner to reduce Applicants' arguments to the claim limitation "determining the first subset." At a minimum, Claim 1 recites that the determined original subset comprises nodes currently unallocated to a job. Additionally, Claim 1 recites that each node in the plurality of nodes comprises a switching fabric integrated to a card and at least two processors integrated to the card. Furthermore, Claim 1 recites that the switching fabric allows node to node communication during execution of a job. Applicants submit that the Examiner must consider all of the limitations recited in this element of Claim 1.

Second, Applicants have amended Claim 1 to recite "determining, using one or more computers" This amendment should eliminate the Examiner's concern about this claim element being, in the Examiner's words, "only mental."

Third, the Examiner's statement that "the mention [in *Keller1*] of 'N defines the number of nodes which are not allocatable . . . ' is more than a determination of a first subset" is, respectfully, incorrect. Amended Claim 1 recites "**determining**, using one or more computers, **an original subset** of a plurality of nodes, **the original subset comprising nodes currently unallocated to a job.**" The cited portion of *Keller1* discloses a "system wide node limit" that is set by an administrator. *Keller1* at §4.3. *Keller1* defines the system wide node limit as consisting "of a threshold (T), a number of nodes (N), and a time slot [start, stop]." *Id.* *Keller1* discloses that "N defines the number of nodes which are not allocatable if a user requests more than T nodes during the interval [start, stop]." *Id.* A variable that is set by an

administrator and defines a number of nodes that are not allocatable (according to the conditions disclosed in *Keller1*) is not the same as an explicit determination, using one or more computers, of a plurality of nodes, the [determined] original subset comprising nodes **currently unallocated to a job,**” as recited in Claim 1.

Turning to the substantive rejection of Claim 1 appearing on pages 3-5 of the Office Action, the Examiner alleges that “*Keller2* shows in a HPC the nodes (in Figure 12) which are hardware-executable elements, comprising a switch to allow the elements [to be] selectable and commutable.” *Office Action* at 4-5. Furthermore, the Examiner acknowledges that *Keller1* and *Keller2* “do not mention the ‘switches’ or cards as of ‘switching fabric.’” *Office Action* at 5 (emphasis in original). However, the Examiner alleges, “Cisco Systems shows switch fabric, switch fabric card, used as the endpoints of Route processors (RP), where a RP executes a job received from such a switch via a scheduler(see Cisco.P.3: three bold dots and ‘Switch Fabric Card’, and see p. 10, fabric switch.” *Office Action* at 5. Applicants respectfully traverse the Examiner’s position.

First, Figure 12 of *Keller2* does not appear to include any depiction of a switch, let alone of “each node in the plurality of nodes comprising a switching fabric integrated to a card and at least two processors integrated to the card, the switching fabric allowing node to node communication during execution of a job,” as recited in Claim 1. To the extent the Examiner intended to refer to Figure 13 of *Keller2*, that figure merely shows a single switch - an Ethernet switch. Even assuming for the sake of argument that the Ethernet switch in *Keller2* could properly be considered “a switching fabric” as recited in Claim 1, *Keller2* would still fail to disclose, teach, or suggest “**each node in the plurality of nodes comprising**” the Ethernet switch, as recited in Claim 1. Instead, in *Keller2* the Ethernet switch is completely separate from the two frontend computers and from the 32 compute nodes, which tends to teach away from the arrangement recited by independent Claim 1. *Keller2*, p. 20. Moreover, even assuming again for the sake of argument that the Ethernet switch could properly be considered “a switching fabric” as recited in Claim 1, *Keller2* would still fail to disclose, teach, or suggest that the Ethernet switch is “**integrated to a card,**” there being “**at least two processors integrated to**” the same card. Therefore, *Keller1* and *Keller2* fail to disclose, teach, or suggest “determining . . . an original subset of a plurality of nodes, the original subset comprising nodes currently unallocated to a job, each node in the plurality

of nodes comprising a switching fabric integrated to a card and at least two processors integrated to the card” as recited in Claim 1.

Second, the cited *Replacement Instructions* describe replacement instructions for a particular model switch router. The cited portions, (pages 3 and 10), describe a switch fabric as circuitry that carries the user traffic between the line cards or between the route processor and a line card. See page 3. The *Replacement Instructions* disclose that the switch fabric card contains only the switch fabric circuitry that carries the user traffic between line cards or between the RP and the line cards. *Id.* According to the *Replacement Instructions*, the card receives scheduling information and the system clock from the clock and scheduler card. *Id.* Figure 5 at page 10 of the *Replacement Instructions* shows where the switch fabric card may be installed in the lower cage of the switch router. See page 10.

While the cited portions of the *Replacement Instructions* use the term “switch fabric” and even “switch fabric card,” they do not appear to disclose, teach, or suggest that “each node in the plurality of nodes compris[es] a switching fabric integrated to a card and at least two processors integrated to the card,” as recited in Claim 1. Furthermore, modifying *Keller1* and *Keller2* in the manner apparently proposed by the Examiner still would not disclose, teach, or suggest these limitations of Claim 1. Instead, replacing the Ethernet switch of *Keller2* with the switch fabric card of the *Replacement Instructions*, which Applicants assume is the modification the Examiner is proposing, still would result in a system in which the switch fabric card is completely separate from the two frontend computers and from the 32 compute nodes, which is different than the arrangement recited in Claim 1. See *Keller2* at 20. Moreover, even assuming again for the sake of argument that the switch fabric card of the *Replacement Instructions* (again replacing the Ethernet switch of *Keller2*) could properly be considered “a switching fabric” as recited in Claim 1, the proposed combination still would fail to disclose, teach, or suggest that the Ethernet switch is “**integrated to a card,**” there being “**at least two processors integrated to**” the same card. Therefore, the proposed *Keller1-Keller2* combination, even when modified in the proposed manner using the *Replacement Instructions*, still would fail to disclose, teach, or suggest “determining, using one or more computers, an original subset of a plurality of nodes, the original subset comprising nodes currently unallocated to a job, each node in the plurality of nodes

comprising a switching fabric integrated to a card and at least two processors integrated to the card” as recited in Claim 1 as amended.

For at least these reasons, Applicants respectfully request reconsideration and allowance of independent Claim 1 and its dependent claims. For at least certain analogous reasons, Applicants respectfully request reconsideration and allowance of independent Claims 9 and 17 and their dependent claims.

B. The Proposed *Keller1-Keller2-Replacement Instructions* Combination is Improper

Applicants respectfully submit that the Examiner has not provided an adequate reason, either in the cited references or in the knowledge generally available to one of ordinary skill in the art at the time of Applicants’ invention, to combine or modify the references in the manner proposed. The claims are allowable for this additional reason.

As allegedly supporting the proposed combination, the Examiner states the following:

Thus, it is obvious to an ordinary in the art to include switch fabric cards as disclosed by Cisco Systems into the HPC cluster as shown in Keller1 and Keller2. Such inclusion would be suitable for a replacement in components in which the Keller1 and Keller 2 describe the endpoints as a generic switch/network card, and Cisco systems provides the detailed the switch fabric cards. The difference is only a change in shape or ingredient of the components. The replacement would be suitable for a choice of products which are selectable in the HPC.

Office Action at 5.

First, Applicants respectfully remind the Examiner that the appropriate test for obviousness considers what would have been obvious to one of ordinary skill in the art at the time of Applicants’ invention, not what is obvious to one of ordinary skill in the art when examining the Application today. Thus, respectfully, what “is [allegedly] obvious to [one of] ordinary [skill] in the art” today is not particularly relevant to the obviousness analysis.¹

¹ See 35 U.S.C. § 103(a) (stating that a “patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious **at the time the invention was made** to a person having ordinary skill in the art to which said subject matter pertains”) (emphasis added).

Second, as discussed above, Applicants respectfully disagree that the cited portion of the *Replacement Instructions* discloses the claimed “switching fabric,” as asserted by the Examiner. In particular, Applicants submit that the switch fabric card of the *Replacement Instructions* does not disclose, teach, or suggest “each node in the plurality of nodes comprising a switching fabric integrated to a card,” there being at least two processors integrated to the same card as recited in Claim 1.

Third, the Examiner’s statement merely provides a conclusory assertion that it would have been obvious to combine portions of *Keller1*, *Keller2*, and the *Replacement Instructions* because doing so would allegedly “be suitable for a choice of products which are selectable in the HPC.” *Office Action* at 5. This type of conclusory assertion is insufficient to satisfy the stringent standards for establishing a *prima facie* case of obviousness. “Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418, 127 S. Ct. 1727, 1741, 82 U.S.P.Q.2d 1385, 1396 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). The Examiner has not presented sufficient “articulated reasoning with some rational underpinning” that it would have been obvious to make the proposed combination.

The Examiner states that it would have been obvious to include the switch fabric cards of the *Replacement Instructions* into the HPC cluster of *Keller1* and *Keller2*, and that such inclusion is merely a replacement of components. *Office Action* at 5. Applicants assume the Examiner is suggesting replacing the Ethernet switch shown in *Keller2* with the switch fabric card disclosed in the *Replacement Instructions*, as the Ethernet switch appears to be the only switch component shown in the cited portions of *Keller2*. As discussed above, such a modification still would result in a system in which the switch fabric card is completely separate from the two frontend computers and from the 32 compute nodes, which is different than the arrangement recited in Claim 1. *See Keller2* at 20.

If instead the Examiner is suggesting that some other component in the actual HPC cluster of *Keller1* or *Keller2* be replaced with the switch fabric cards of the *Replacement Instructions*, Applicants respectfully submit that the only source for modifying *Keller1* and *Keller2* with the “switch fabric” of the *Replacement Instructions* appears to be Applicants’

claims. Thus, Applicants submit that the Examiner's attempt to combine the *Replacement Instructions* with *Keller1* and *Keller2* appears to constitute the type of impermissible hindsight reconstruction of Applicants' claims, using Applicants' claims as a blueprint, that is specifically prohibited by the M.P.E.P. and governing Federal Circuit cases. In any case, as discussed above, Applicants submit that such a modification would still fail to disclose, teach, or suggest "each node in the plurality of nodes comprising a switching fabric integrated to a card," there being at least two processors integrated to the same card as recited in Claim 1.

For at least these additional reasons, Applicants respectfully request reconsideration and allowance of independent Claim 1 and its dependent claims. For at least certain analogous additional reasons, Applicants respectfully request reconsideration and allowance of independent Claims 9 and 17 and their dependent claims.

II. Request for Evidentiary Support

Should a rejection based on any of the above asserted rejections be maintained, Applicants respectfully request appropriate evidentiary support. Additionally, if the Examiner is relying upon "common knowledge" or "well known" principles to establish the rejection, Applicants request that a reference be provided in support of this position pursuant to M.P.E.P. § 2144.03. Furthermore, to the extent that the Examiner maintains any rejection based on an "Official Notice" or other information within the Examiner's personal knowledge, Applicants respectfully request that the Examiner cite a reference as documentary evidence in support of this position or provide an affidavit in accordance with M.P.E.P. § 2144.03 and 37 C.F.R. 1.104(d)(2).

III. No Waiver

All of Applicants' arguments and amendments are without prejudice or disclaimer. Additionally, Applicants have merely discussed example distinctions from the references cited by the Examiner. Other distinctions may exist, and Applicants reserve the right to discuss these additional distinctions in a later Response or on Appeal, if appropriate. By not responding to additional statements made by the Examiner, Applicants do not acquiesce to the Examiner's additional statements. The example distinctions discussed by Applicants are sufficient to overcome the Examiner's rejections.

Conclusion

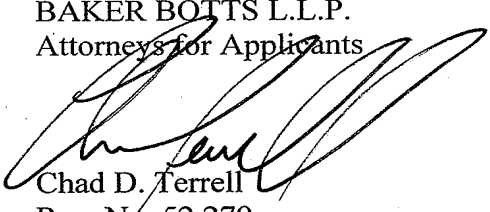
Applicants have made an earnest attempt to place this case in condition for allowance. For at least the foregoing reasons, Applicants respectfully request full allowance of all pending claims.

If the Examiner feels that a telephone conference would advance prosecution of this Application in any manner, the Examiner is invited to contact Chad D. Terrell, Attorney for Applicants, at the Examiner's convenience at (214) 953-6813.

Although Applicants believe no fees are due, the Commissioner is hereby authorized to charge any necessary fees and credit any overpayments to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,

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